APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/678,546	10/02/2003	Mohammad Jaber Borran	873.0129.U1(US)	2515

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EXAMINER
JOSEPH, JAISON

ART UNIT	PAPER NUMBER
2634	

DATE MAILED: 01/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	10/678,546	BORRAN ET AL.
	Examiner	Art Unit
	Jaison Joseph	2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>23 October 2003</u>.

2a) ☒ This action is **FINAL.**   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-23* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1,3,10,11,13,20 and 21* is/are rejected.

7) ☒ Claim(s) *2, 4-9, 12, 14 - 19, 22, and23* is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1.   Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Park et al (US

Patent 5,537,430).

Regarding claim 1, Park et al discloses a method of encoding plurality of bits

comprising selecting one of at least two subsets of signal constellation and a point

within said selected subset (se column 1, lines 41 – 44) and modulating the selected

point using a carrier waveform (see column 4, lines 46 – 48), wherein the selected

subset includes at least two constellation points that separated from one another by a

distance based on a conditional distribution (see column 1, line 38).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2.   Claims 3 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Park et al (US Patent 5,537,430) in view of Ramchandran et al (US Patent 5,267,021).

Regarding claim 3, which inherits the limitations of claim 1, Park et al failed to

teach selecting a subset of a signal constellation and point within said selected subset

based on a plurality of K1+K2 bits, usig K1 bits to select said subset and the K2 bits

select the point within the said subset. However, Ramchandran et al teach selecting a

subset of a signal constellation and a point within selected subset comprises plurality of

K1+K2 bits, using K1 of the bits to select said subset and the K2 bits to select the points

within the said subset (see column 11, lines 65 – 68 and column 12, lines 1 – 3).

Therefore, it would be obvious to an ordinary skilled in the art at the time the invention

was made to use Ramchandran et al.'s coding scheme in Park et al.'s encoder to

benefit the simpler design.

Regarding claim 10, which inherits the limitations of claim 1, Park et al failed to

teach the method comprising transmitting the carrier , receiving the carrier over a

fading channel and decoding the symbol using a Viterbi algorithm. However

Ramchandran et al. teach a method of transmitting the carrier, receiving the carrier

over a fading channel and decoding the symbol using a Viterbi algorithm (see column

12 lines 61 – 63). Therefore it would be obvious to an ordinary skilled in the art at the

time invention was made to use Ramchandran et al.'s receiver instead of Park et al.'s

receiver to reduce design complexity.

3.   Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over

McCallister et al. (US Patent 6,097,764) in view of park et al (US Patent 5,537,430).

        Regarding claim 11, McCallister et al. discloses a transmitter comprising an

encoder having an input for receiving a plurality of input bits (see column 5, lines 39 –

40), a mapper having an input coupled to an output of the encoder (see column 7, lines

54 – 57), and a computer readable storage medium (see column 8, lines 2 – 6) coupled

to the mapper for storing at least one constellation. McCallister failed to teach the

mapper selects a subset of signal constellation and a point within the selected based on

plurality of input bits, said selected subset including at least two constellation points

that are separated from one another by a distance on a conditional distribution.

However, Park et al teach Park et al discloses a method of encoding plurality of bits

comprising selecting one of at least two subsets of signal constellation and a point

within said selected subset (se column 1, lines 41 – 44) and modulating the selected

point using a carrier waveform (see column 4, lines 46 – 48), wherein the selected

subset includes at least two constellation points that separated from one another by a

distance based on a conditional distribution (see column 1, line 38). Therefore, it would

be obvious to an ordinary skilled in the art to use Park et al.'s selection method in

McCallister et al.'s transmitter to improve the signal quality.

4.   Claims 13 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable

over McCallister et al (US Patent 6,097,764) in view of Ramchandran et al (US Patent

5,267,021).

Regarding claim 13, which inherits the limitations of claim 11, McCallister et al failed to teach selecting a subset of a signal constellation and point within said selected subset based on a plurality of K1+K2 bits using K1 bits to select said subset and the K2 bits to select the point within said subset. However, Ramchandran et al teach selecting a subset of a signal constellation and point within said selected subset based on a plurality of K1+K2 bits using K1 bits to select said subset and the K2 bits to select the point within said subset. Therefore, it would be obvious to an ordinary skilled in the art at the time the invention was made to use the Ramchandran et al.'s coding scheme in McCallister et al.'s transmitter to benefit simpler design.

Regarding claim 20, which inherits the limitations of claim 11, McCallister et al failed to teach the method comprising transmitting the carrier , receiving the carrier over a fading channel and decoding the symbol using a Viterbi algorithm. However Ramchandran et al. teach a method of transmitting the carrier, receiving the carrier over a fading channel and decoding the symbol using a Viterbi algorithm (see column 12 lines 61 – 63). Therefore it would be obvious to an ordinary skilled in the art at the time invention was made to use Ramchandran et al.'s receiver in Mccallister et al.'s receiver to reduce design complexity.

5.   Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ramchandran et al. (US Patent 5,267,021) in view of Park et al. (US Patent 5,537,430).

Regarding claim 20, Ramchandran et al teach a method of encoding a plurality of m=k1+k2 input bits comprising, selecting a subset of a signal constellation based on the K1 inputs (see column 11, lines 65-68 and column 12, line 1), selecting a point within

the selected subset based on the k2 input bits (see column 12, lines 2 - 3),

Ramchandran et al failed to teach modulating theselected point using a carrier

waveform. However, Park et al teach modulating selected point using a carrier

waveform (see column 4, lines 46 - 48). Therefore it would be obvious to an ordinary

skilled in the art to use park et al.'s teachings in Ramchandran et al.'s encoder to reduce

complexty of the design.

Allowable Subject Matter

6.　　Claims 2, 4 – 9, 12, 14 – 19, 22, and 23 are objected to as being dependent upon

a rejected base claim, but would be allowable if rewritten in independent form including

all of the limitations of the base claim and any intervening claims.

Conclusion

7.　　Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Jaison Joseph whose telephone number is (571) 272-

6041. The examiner can normally be reached on M-F 8:30 - 5.

　　If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Stephen Chin can be reached on (571) 272-3056. The fax phone number

for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

Jaison Joseph
01/07/2005

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